Algebra 1

Lesson 10-3

Operations with Radical Expressions

Goal: to simplify sum, differences, quotients and products

Can we add $x^2$ and $4x$?

Why or why not?

No, Not like terms

How about $\sqrt{5}$ and $3\sqrt{5}$

Simplify the following:

$3\sqrt{2} - 8\sqrt{2} = -5\sqrt{2}$

$5\sqrt{32} - 4\sqrt{18}$

$4 \cdot 5\sqrt{2} - 4 \cdot 3\sqrt{2}$

$20\sqrt{2} - 12\sqrt{2} = 8\sqrt{2}$

Simplify:

$1x^4 \cdot 3x^3 = 3x^7$

$\sqrt{2}(\sqrt{6} + 5) = \sqrt{12} + 5\sqrt{2}$

$2\sqrt{3} + 5\sqrt{2}$

$\sqrt{6}(-2\sqrt{3})(4\sqrt{3} + 3\sqrt{6})$

$4\sqrt{18} + 3\sqrt{36} - 8\sqrt{9} - 6\sqrt{18}$

$-2\sqrt{18} + 18 - 24$

$-6 - 2\sqrt{18}$

$-6 - 6\sqrt{2}$

Simplify:

$(\sqrt{11} - 2)^2 = (\sqrt{11} - 2)(\sqrt{11} - 2)$

$11 - 2\sqrt{11} - 2\sqrt{11} + 4$

$15 - 4\sqrt{11}$

Is this simplified?

$\frac{4}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{4\sqrt{5}}{\sqrt{25}} = \frac{4\sqrt{5}}{5}$

How about:

$\frac{-3}{(\sqrt{10} + \sqrt{5})} \cdot \frac{(\sqrt{10} - \sqrt{5})}{(\sqrt{10} - \sqrt{5})}$

$\frac{-3\sqrt{10} + 3\sqrt{5}}{10 - \sqrt{50} + \sqrt{50} - 5}$

$\frac{-3\sqrt{10} + 3\sqrt{5}}{5}$

To rationalize this denominator, we must use the conjugate of the bottom.

$$\frac{-3}{\sqrt{10}+\sqrt{5}}$$

Simplify

$$\frac{8}{\sqrt{3}+\sqrt{11}}$$

$$\frac{8\sqrt{3}-8\sqrt{11}}{-8}$$

$$-\sqrt{3}+\sqrt{11}$$

Hwk: pg 629 - 631

#10 - 42 every 4th,

48 - 56 evens, 60, 63a

Quiz tomorrow 10.1-10.3